Distributed Open Unified Government Network

Federal Committee on Statistical Methodology (FCSM)
Geospatial Interest Group (GIG)

During a 30-year career with the USGS, Doug was known for his foundational work in modern geospatial information systems. Doug was a familiar face, a brilliant mind, and a gracious individual. Doug chaired several working groups, contributed to countless OGC documents, and worked tirelessly to advance the vital components of Spatial Data Infrastructure at all levels of government - not only in the USA on behalf of the US Federal Geographic Data Committee, but around the world. He was a recognized expert on all things geospatial, and was well known for his expertise in metadata and catalogs. Doug was also a member of a small group of insightful OGC members who in the late 1990's helped establish what has become today's OGC Interoperability Program.

In 2005, Doug received OGC's highest award, the Kenneth D. Gardels Award, for his significant personal and professional contributions to advancing the OGC community, and for his leadership in advancing geospatial interoperability and open standards globally.

His vision and commitment to make this information available around the world has been highly praised. He was described by colleagues as “an incredible force behind many of the things we take for granted in modern geospatial information systems.” He was a brilliant, versatile and dedicated public servant.

Dedicated to the Life and Career of Doug Nebert

- Geospatial Pioneer – In Memory of Doug Nebert (1962-2014)
- Sad News about Doug Nebert | OGC
- In memory of our colleague and friend Doug Nebert
- In Memoriam: Longtime Reston Resident Doug Nebert
- Doug Nebert Passes

What is it?

A distributed, interoperable, and synchronized suite of shared services to publish, find, share, discover, and collaborate on the Data, Documents, and Resources across any level of Government using only well supported Free and Open Source Software.

in other words... **An Open Source - Open Data Infrastructure**

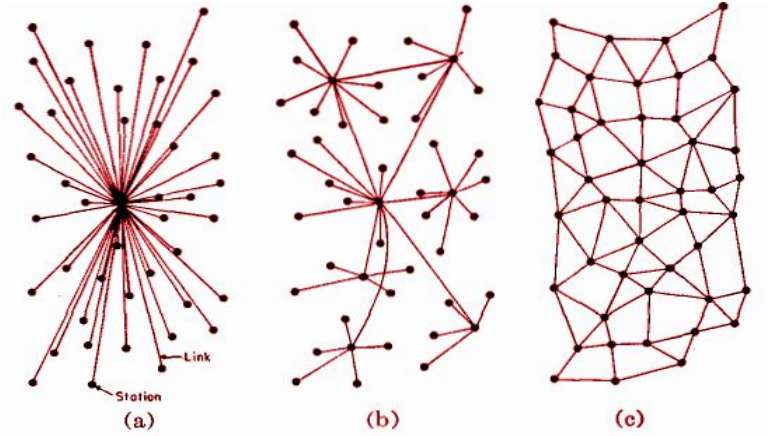


Fig. 1—(a) Centralized. (b) Decentralized. (c) Distributed networks.

How does it work?

Many organisations already have their data in repositories with well-defined process and procedures for publishing and managing data. In this case the data can be simply pulled regularly into CKAN from the existing repositories. **To facilitate this model we've developed a sophisticated and customisable "harvesting" mechanisms which can fetch and import records from many different repository source**s, some examples include:

- Web Catalog Service (CSW) Servers (See Geospatial for more information)
- Existing Web Catalogues (Libraries, Portals, Content/Document Management Systems)
- Simple HTML index pages or Web Accessible Folders
- ArcGIS or Geoportal Servers
- *Other CKAN instances*

Components

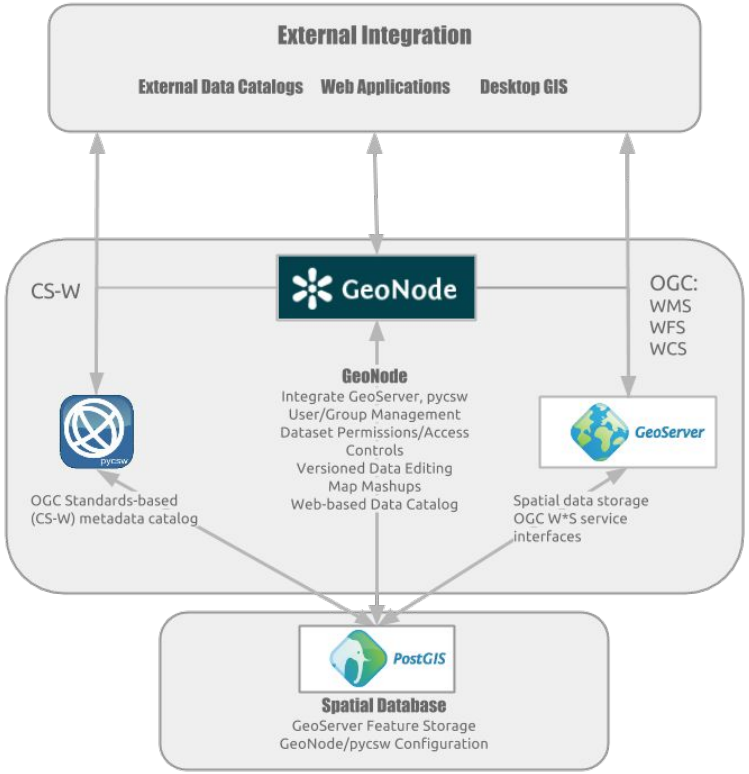
GeoNode

Geonode is an open source web Spatial Data Infrastructure (SDI) that provides open access to Spatial Data and its Metadata which can be directly Downloaded, Viewed, Edited, Collaborated on, or accessed as a Web Service.

ckan

The CKAN project (software by Data.gov 2.0) is a Open Data Portal which can dynamically harvest Geonode. This framework together would allow agencies to harvest their existing services like websites, libraries, GIS Servers (including ESRI ArcGIS Servers). Nearly any service with resources (i.e. documents or data); with over 60 extensions available to Harvest existing services

GeoNode



Download Service(s)	Web Service(s)
Vector Zipped Shapefile (*) GML 2.0 GML 3.1.1 CSV Excel GeoJSON KMZ **Raster** GeoTIFF (*) ImageMosaic Gtopo30 ArcGRID **Both** KML Service Tile Package **Upload Format*	**Web Mapping Service:** WMS 1.1.1 **Vector data via Web Feature Service:** WFS 1.1.0 **Raster data via Web Coverage Service:** WCS 1.1.1 **Metadata search via Catalog Service for the Web:** CSW 2.0.2 **Cached tiles via Web Map Tile Service:** WMTS 1.0.0 **KML Service:** Per Layer – Download Option (Google Earth Service)

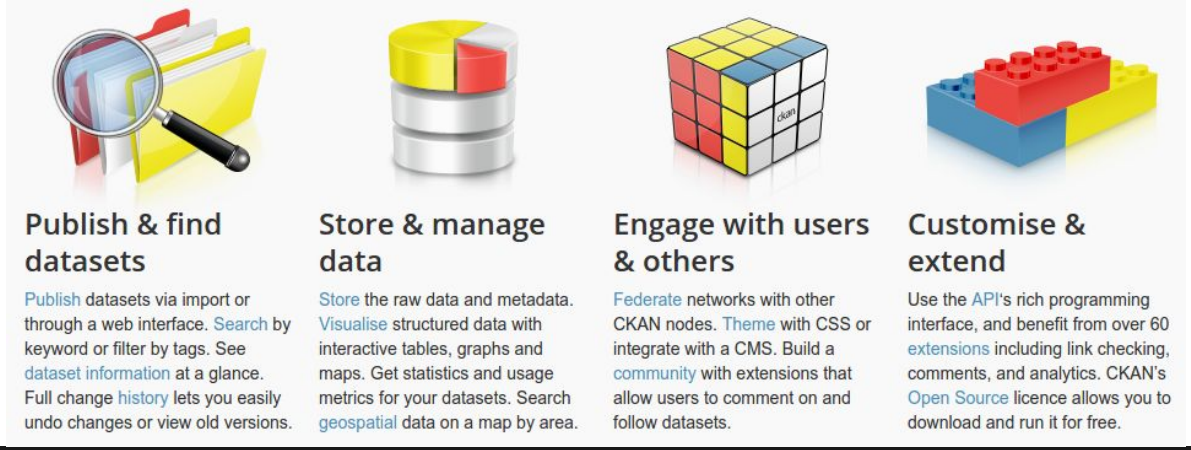
Geonode Overview: A Social Spatial Data Infrastructure

ckan

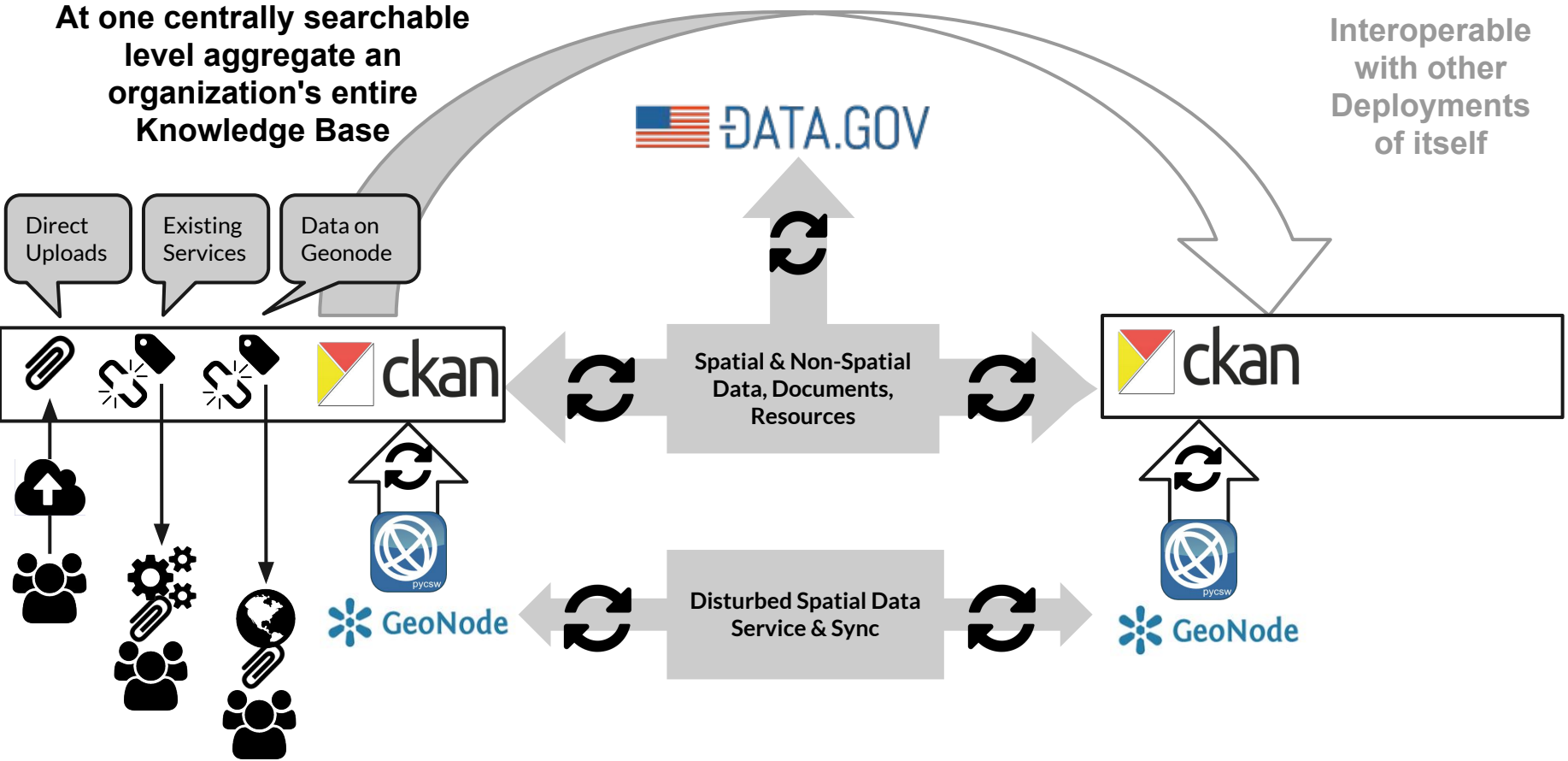
Comprehensive Knowledge Archive Network

Powerful Data Management Platform that can be networked and synced to other instances of itself

Harvest… data from existing services and data portals
Publish… data and document by uploading them directly
Discover… data with an extremely powerful search tool or by browsing categories or keywords
Use… data by previewing and/or downloading directly or by uploading new services



CKAN Overview: Open Data Platform and Harvester



How and what it will do...

Current Platforms

Enterprise Platforms

- NEPAnode (http://nepanode.anl.gov/)
- State GeoNode (http://geonode.state.gov)

Partnership Platforms

- Ebola GeoNode (http://ebolageonode.org)
- Secondary Cities GeoNodes
    - Cusco GeoNode (http://cuscogeonode.state.gov)

combine and analyze **3 types of data** in one place

Resource Data

National Data

Regional Data

Main Site
http://nepanode.anl.gov

Public Data Portal for Resource Data and Documents

Project Data

Project Sites/Routes Alternatives

Site, Local, County, State Data

Project Site
http://projects.nepanode.anl.gov

Group Permissioned Workspace for Project Data and Documents

Static Data

Historical Maps/ Surveys

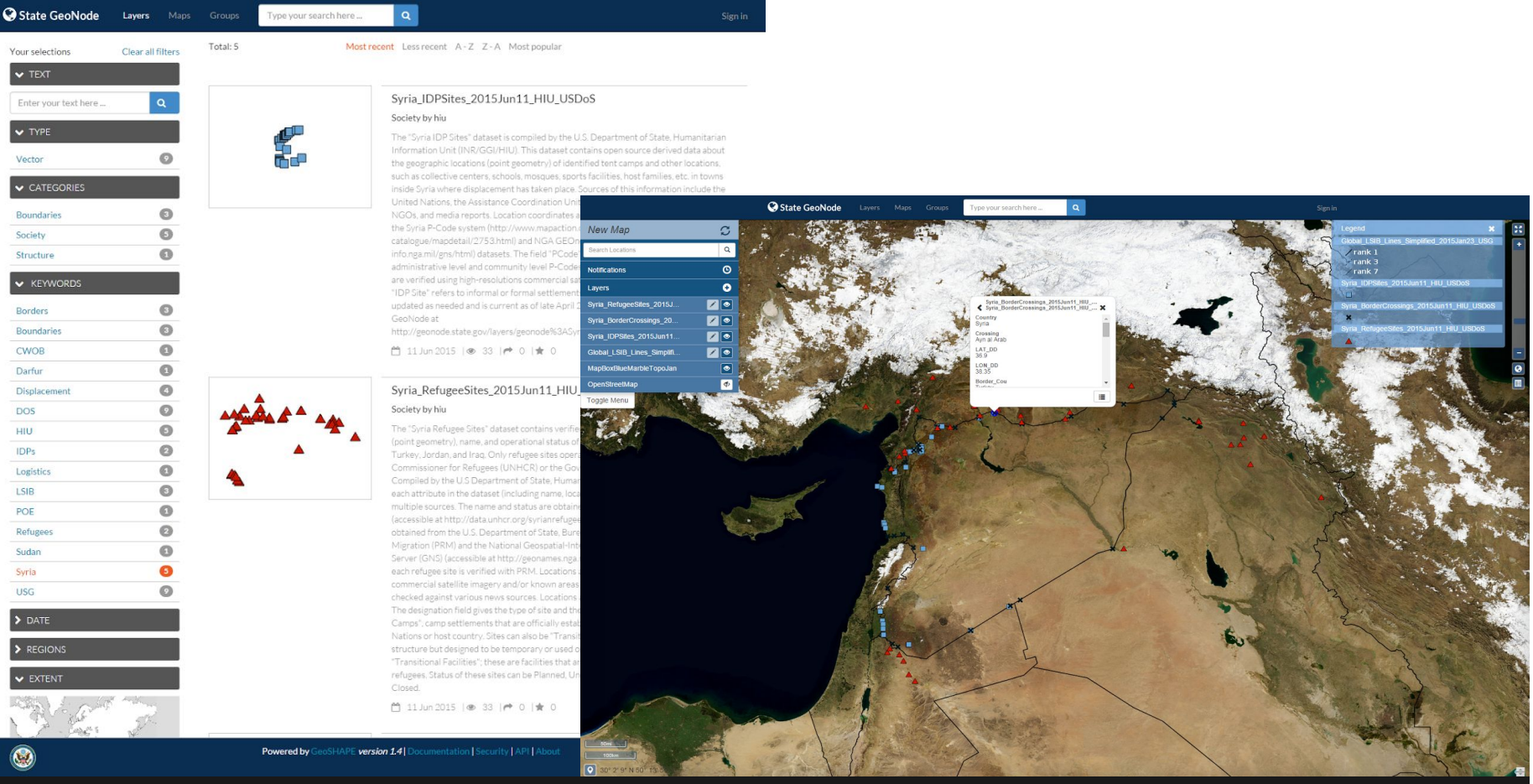
Engineering Documents / Blueprints

MapWarper
http://warp.nepanode.anl.gov

Georeferencer for Static Maps and NEPA Project Archive

NEPAnode on Github
Proud Member of the Geonode Open Source Community

NEPAnode



State Department GeoNode

Geoshape (formerly ROGUE)

Customized Front End and New Features with ongoing compatibility with Geonode Core - Community Edition

http://geoshape.org

GeoGig

Track Changes for Geospatial features and their attributes

- ❏ Distributed Version Control System
- ❏ Modelled after Git
- ❏ Manage multiple disconnected or synchronized branches between Geoservers

MapLoom

Web application integrating GeoGig for feature editing and management of distributed repositories

- ❏ Web map for editing geospatial data stored in Geonode
- ❏ Integrates GeoGig notifications and workflow
- ❏ Built using newest stable components (Openlayers 3 & Angular.js)
- ❏ Edit Geometry and Attributes or Identify features all with one click (No Edit/Identify Buttons)
- ❏ Geocoder/Gazeteer for Address or POI look-up/zoom
- ❏ Table view of data allows filtering by attribute, navigating to features, and editing from a table
- ❏ Accept, Reject, Modify, Resolve Conflicts for new or modified features (point/line/polygon/attributes)
- ❏ Review history of layers & feature edits in GeoGig export commit history to a .csv file

Arbiter

Disconnected Mobile Data Collection Android Application

- ❏ Native Android App (Phone/Tablet)
- ❏ Remote data collection from the field
- ❏ Create & edit points, lines, polygons
- ❏ Upload photos to a feature (point/line/polygon)
- ❏ Download basemap tiles & layers for Area of Interest
- ❏ Work disconnected
- ❏ Sync over 3G or WiFi

Geoshape version of Geonode

GeoGig

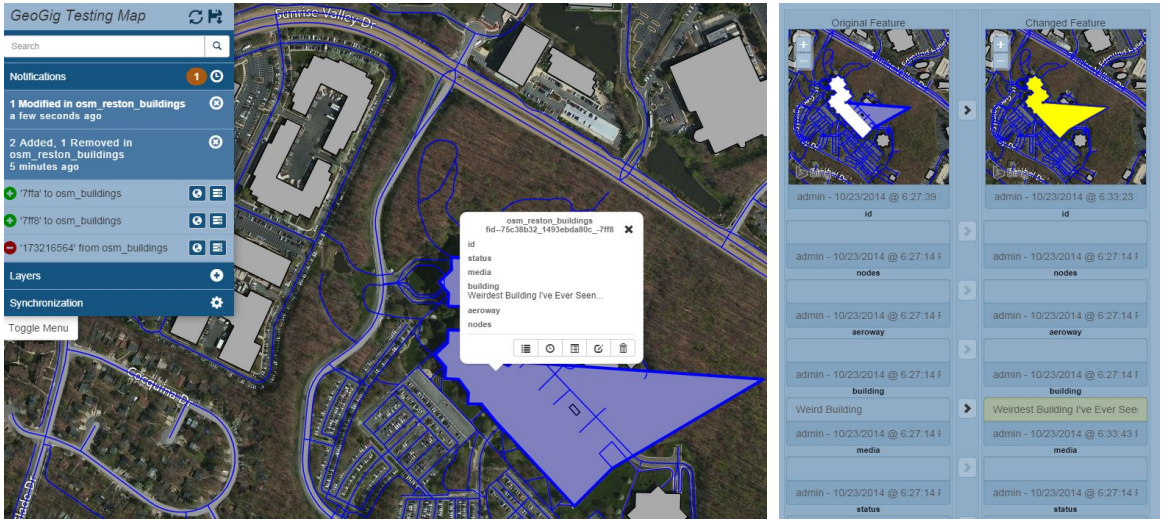
Track Changes for Geospatial features and their attributes

MapLoom

Web application integrating GeoGig for feature editing and management of distributed repositories

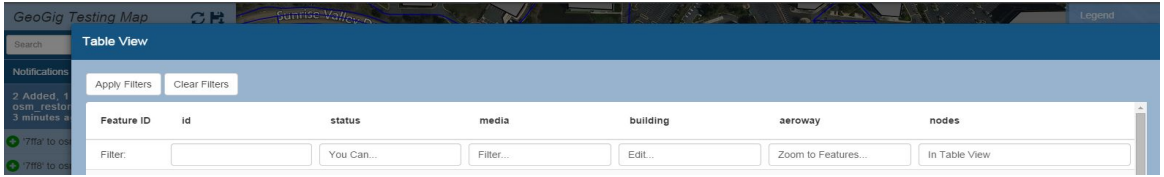
Track Changes for Geospatial Features all within a Web Browser

See who edited/deleted/created what and where



Manage Conflicts from Simultaneous Editing

Edit or Search Attributes in Table View



Distributed Version Control - GeoGig and Maploom

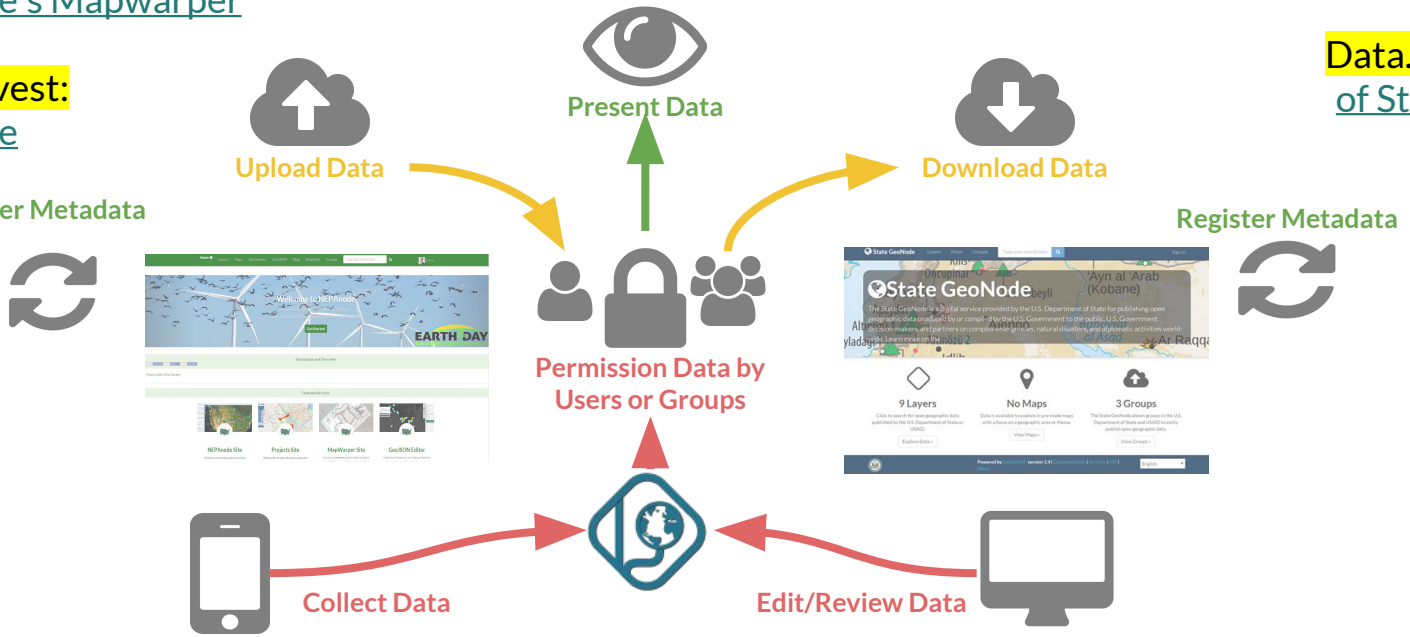
NOAA Harvest:
of NEPAnode
of NEPAnode's Mapwarper

OpenEI Harvest:
of NEPAnode

Open Data Network

HDX Harvest:
of State Geonode

Data.gov Harvest:
of State Geonode



Arbiter
Disconnected Mobile Data Collection Android Application

GeoGig
Distributed Version Control for features and their attributes

MapLoom
Web application for feature editing and management

Manage Data and Metadata as a Singularity

Backup Slides

Disconnected Mobile Data Collection

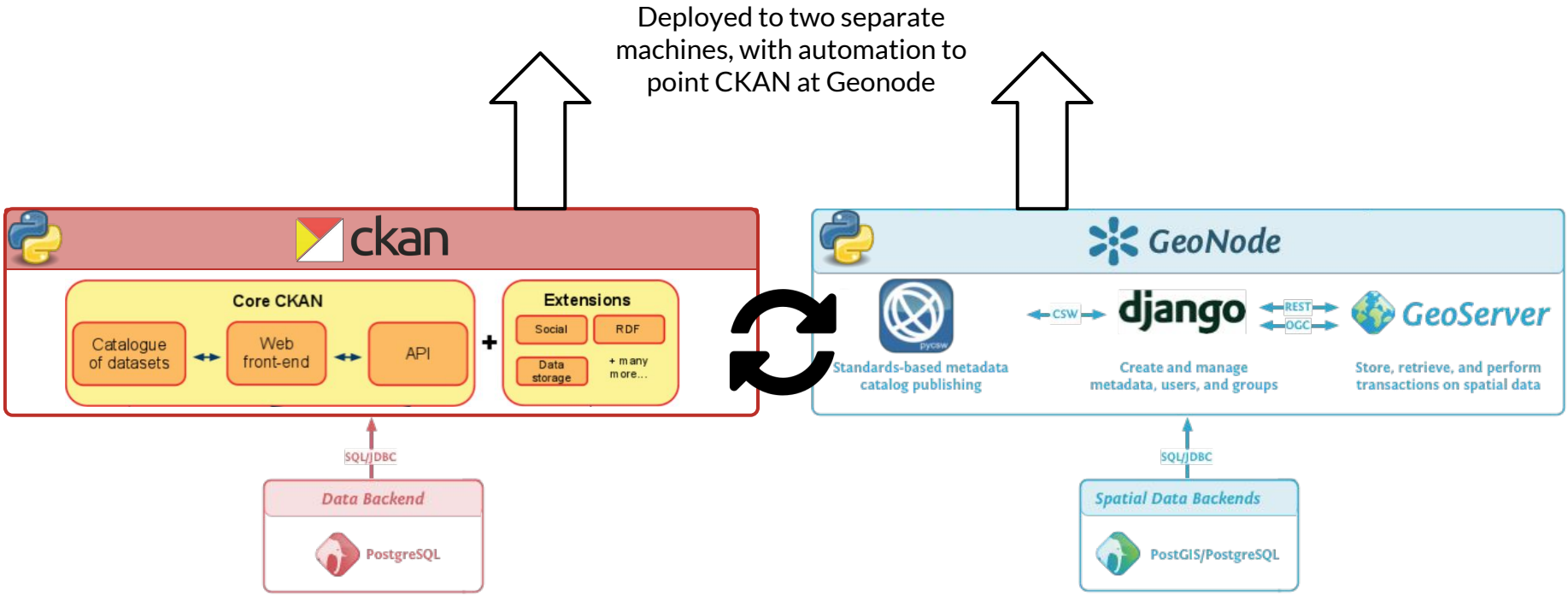
Arbiter
Disconnected Mobile Data Collection Android Application

<u>What Can you do with Arbiter?</u>
With Arbiter you can download maps and map layers to use offline. You can edit the content of the map layers and you can associate photos to the elements in those map layers. Arbiter lets you:

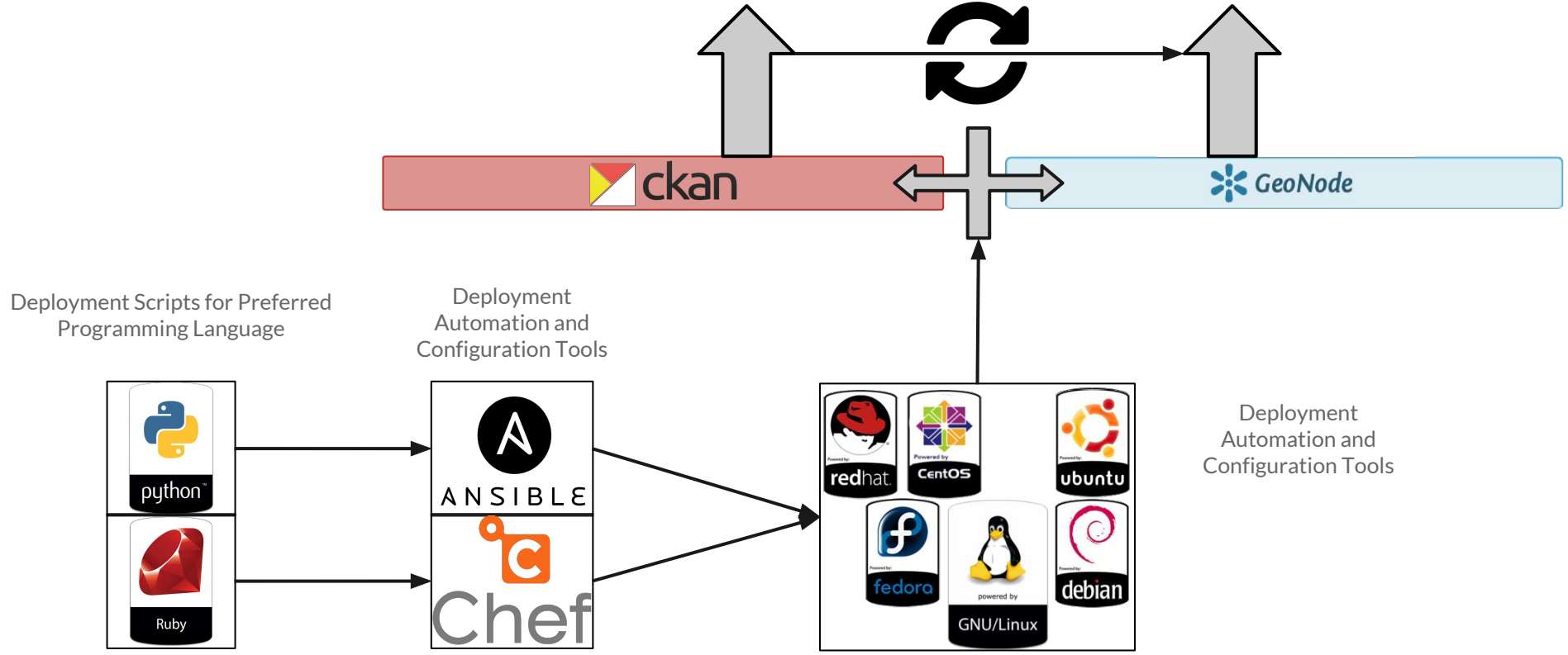
- Create different projects
- Download map tiles from © OpenStreetMap to work offline
- Download data from Geonode Server
- Add points, lines, and polygon elements to map layers
- Edit the geometry for map elements
- Edit attributes for point, line, and polygon elements for map layers
- Take a photo and associate it with elements in the map layers
- Use the GPS from your device to find your location on the map
- Send your edits to the server when you have connection (cell or wifi)
- Receive edits from others when you synchronize (cell or wifi)

➔ Documentation and Tutorials on Arbiter
➔ Video Tutorial Series on Mobile Data Collection with Arbiter

Mobile Data Collection - Arbiter



DOUGN Architecture



DOUGN Technical Details